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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.   | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------|------------------|
| 10/663,646  | 09/17/2003  | Yutaka Ohmoto        | 500.39750VX1          | 3794             |
| 20457   | 7590        | 02/14/2006           | EXAMINER              |                  |
| ANTONELLI, TERRY, STOUT & KRAUS, LLP<br>1300 NORTH SEVENTEENTH STREET<br>SUITE 1800<br>ARLINGTON, VA 22209-3873 |             |                      | DHINGRA, RAKESH KUMAR |                  |
|   |             |                      | ART UNIT              | PAPER NUMBER     |
|   |             |                      | 1763                  |                  |

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/663,646

Applicant(s)

OHMOTO ET AL.

Examiner

Rakesh K. Dhingra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 12-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

***DETAILED ACTION***

***Response to Arguments***

Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection as explained below:

Applicant has cancelled claims 1-11 and added new claims 12-17, with claims 12, 16 being independent claims.

Applicant further argues that structural arrangements as recited in the new independent claims 12, 16 are not disclosed or taught in the prior art cited by the examiner for rejection of claims 1-11 (as per office action) and thus these rejections are considered to be obviated due to cancellation of claims 1-11 and presentation of new claims 12-17. Examiner responds that new references by Ogahara (US Patent No. 5,958,265) and Sill et al (US Patent No. 6,367,413) have been found that read on limitations of new independent claims 12, 16 and accordingly claims 12, 16 have been rejected under 35 USC 103 (a) as explained below.

Further dependent claims 13-15, 17 have also been rejected under 35 USC 103(a) as explained below.

***Claim Rejections - 35 USC § 112***

Claim 17 recites the limitation "said direct current source" in line 3. There is insufficient antecedent basis for this limitation in the claim. It appears that claim 17 should be dependent upon claim 16 since that claim includes the limitation "a direct current source". Therefore for the purpose of examination claim 17 has been interpreted and considered as depending upon claim 16.

***Claim Rejections - 35 USC § 103***

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 12, 13, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogahara (US Patent No. 5,958,265) in view of Sill et al (US Patent No. 6,367,413).**

Regarding Claim 12: Ogahara teaches a plasma processing apparatus (Figure 1) for processing a product using a plasma comprising:

a power source 6 source for applying bias power to an (holder main body) electrode 1 on which a substrate 10 to be processed is disposed;

a holding plate (insulating layer) 2 formed on a surface of said electrode on which said substrate to be processed is disposed;

a chucking electrode (first conductive material) 61 formed within said insulating layer;

a conductor (first feeder line) 62 connecting said power source and said first conductive

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a characteristic correction ring (silicon ring) 9 mounted at a position surrounding the substrate to be processed, on the surface of said electrode on which the substrate to be processed is disposed,

a ring chucking electrode (second conductive material) 91 formed within said insulating layer 2 and under said silicon ring 9;

a conductor (second feeder line) 92 connecting said power source 6 and said second conductive material (Column 1, line 30 to Column 2, line 45 and Column 4, lines 40-50 and Column 5, lines 5-40 and Column 7, line 10 to Column 8, line 10) .

Ogahara does not teach first and second variable capacitors.

Sill et al teach a plasma apparatus (Figures 1, 2) that includes substrate support 20 with plurality of electrodes 44, 46 that are coupled to RF power source 48 through variable capacitors 56, 58 respectively (Column 6, line 50 to Column 8, line 30).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use variable capacitors for coupling the RF power source to the plurality of electrodes in substrate support as taught by Sill et al in the apparatus of Ogahara to vary the dc bias created on the substrate surface (Column 8, lines 5-30).

Regarding Claim 13: Ogahara teaches that substrate holding plate (insulating layer) is formed of alumina (Column 2, lines 37-43).

Regarding Claim 16: Ogahara in view of Sill et al teach all limitations of the claim including a direct current power source 64 connected between electrode 1 and high frequency power source 63 (Ogahara – Figure 1 and Column 8, lines 35-45).

**Claims 14, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogahara (US Patent No. 5,958,265) in view of Sill et al (US Patent No. 6,367,413) a**

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**applied to Claim 13 and further in view of Shamouillan et al (US Patent No. 6,557,248).**

Regarding Claim 14: Ogahara in view of Sill et al teach all limitations of the claim except thickness of insulating layer.

Shamouillan et al teach an apparatus (electrostatic chuck) [Figure 1a] that includes an electrode 50 within insulating layers 35a, 35b. Further, Shamouillan et al teach (Figures 1b, 1c) chuck with multiple electrodes 130, 135 that also includes insulation voids 52 where insulation has receded (less thickness of insulating layer) compared to portions with electrodes for the purpose of having cooling grooves (Column 5, lines 1-15 and Column 8, lines 1-30).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to configure thickness of insulating layer as taught by Shamouillan et al in the apparatus of Ogahara in view of Sill et al to enable incorporate cooling grooves (Column 8, lines 1-30).

Regarding Claim 15: Shamouillan et al teach (Figure 1b) that insulating layer 35 is disposed under first electrode (said first conductive material) 135 and second electrode (said second conductive material) 130 and between said first conductive material 130 and base (said electrode) 25 and between said second conductive material 135 and base (electrode) 25, and the insulating layer is formed even between the electrodes 130, 135 (center portion of base 25) {Column 8, lines 1-30}.

**Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogahara (US Patent No. 5,958,265) in view of Sill et al (US Patent No. 6,367,413) as applied to Claim 16 and further in view of Nakano et al (US Patent No. 6,270,618).**

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Regarding Claim 17: Ogahara in view of Sill et al teach all limitations of the claim including RF filter 64, 66 (could be configured as resonant circuits including resonant coils) connected between DC power source 50 and electrodes 46, 44 (Sill et al – Figure 1, lines.

Ogahara in view of Sill et al do not teach resonant coils.

Nakano et al teach an apparatus (Figures 1A) that includes a band eliminators (resonance LC circuit) 61b, 61b' where resonance coils L2, L2' are coupled to variable capacitors C2, C2' that are connected to susceptor electrode (feeder line) 8 [Column 2, lines 40-50 and Column 3, lines 30-65].

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a resonant circuit (coil and capacitor) as taught by Nakano et al in the apparatus of Ogahara in view of Sill et al to provide band eliminators to enable trap plasma between plasma excitation electrode and susceptor electrode (Column 3, lines 30-54).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rakesh Dhingra



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Art Unit 1763